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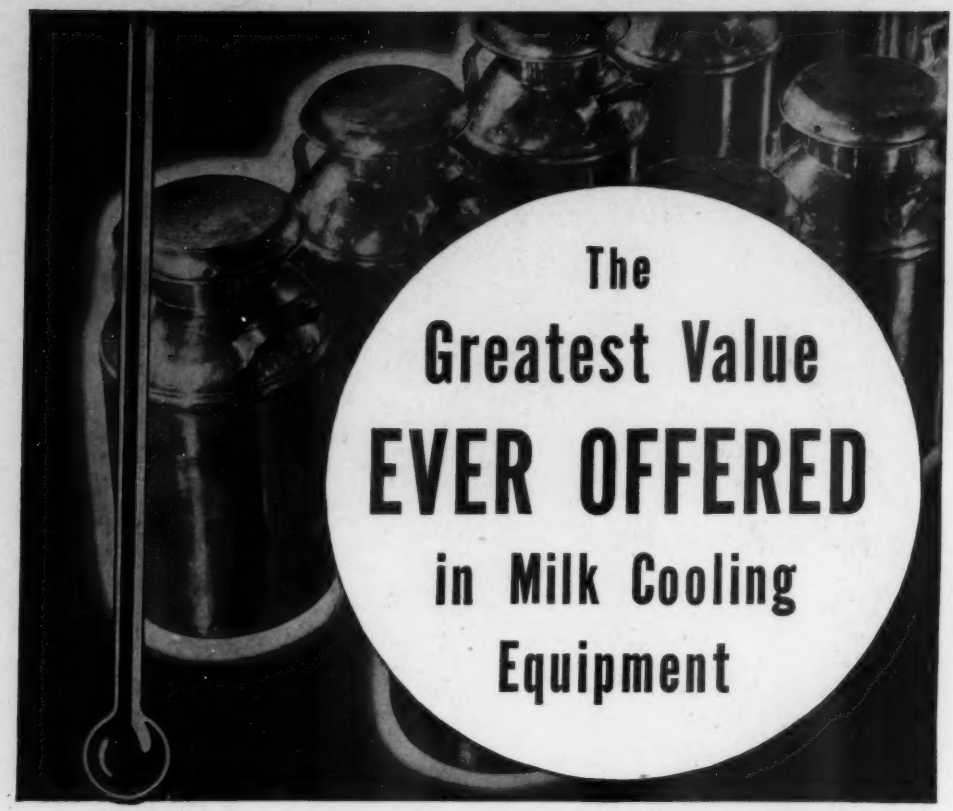

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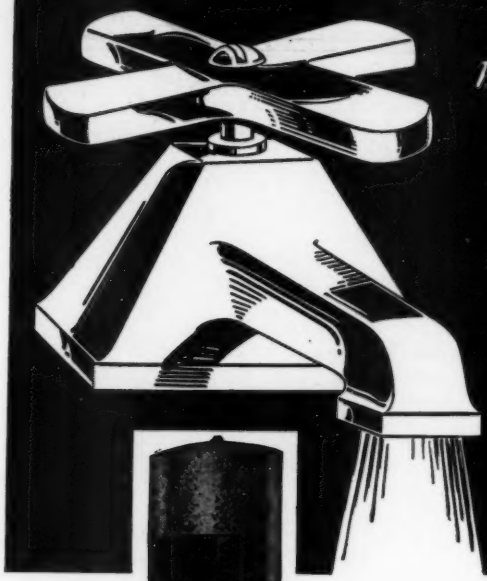

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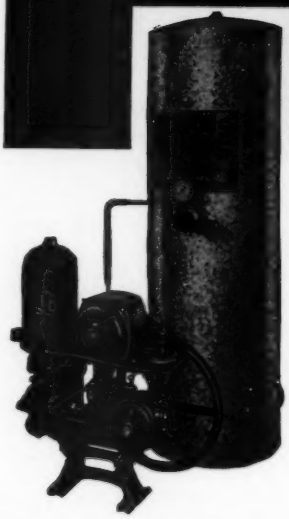

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April, 1936

Electricity on the Farm

Vol. 9, No. 4

EDITORIAL

THE PENALTY OF IMPURE WATER

Typhoid fever has been practically eliminated in cities, but rural areas still suffer from this dangerous malady.

The disease is most frequently caused by drinking water which contains human pollution.

In cities, water is treated with chlorine gas to kill the typhoid bacilli. In farming districts it is not possible to employ this means to sterilize water as clorinators are not made which are capable of treating such small supplies.

The only practical alternative in guarding against typhoid resulting from drinking water on the farm is to make sure that the water supply remains pure.

Shallow dug wells are always dangerous if not sealed by concrete, or pipe, extending well above the surface of the surrounding ground. Where not so sealed, water from melting snow or from heavy rains, carrying pollution, may find its way into the well and illness may result.

Deep wells, cased by pipe, are far safer. There is less danger from surface seepage as well as from subterranean seepage from cesspools, privies and cisterns.

Water, to remain pure and safe, must not come in contact with such infiltrations.

A little trouble taken to protect the purity of the well water may pay big dividends in the way of better health.

FRED SHEPPERD.

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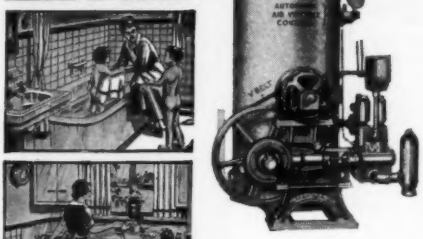

LONG before electricity was available, many a farm family enjoyed running water, furnished by a reliable engine or windmill driven MYERS Water System. Many of these systems were later converted to automatic electric drive and are now serving even more smoothly than when they were first installed. Their years of perfect service testify to the skill of MYERS designers and the quality of MYERS workmanship and materials upon which the MYERS reputation has been established.

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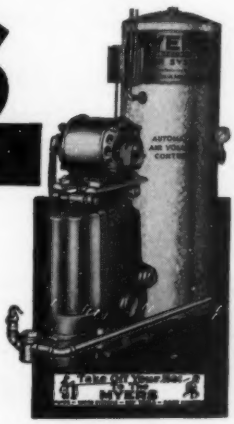

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GENERAL ELECTRIC

50 TONS OF WATER

That's how much the average farm family uses per year; and on most farms it is pumped by hand and carried an average distance of 74 feet.

By I. P. BLAUSER

THE desire to do away with the drudgery of pumping and carrying water by hand, and to enjoy the other advantages of water under pressure played an all important part in the decision to sign up for electric service, made by a farm family, which I visited several weeks ago. Ordinarily it is better, safer, and more convenient lighting that is uppermost in minds of people thinking about the possibility of getting electricity, and before they have had a chance to learn at first hand the many other things that electricity can do for them.

Water under pressure, at one time considered a luxury on farms, can no longer be classified as such, even though far too few farm homes have it available. The Federal Housing Survey which was carried on in parts of nine counties in Ohio in 1934, shows some interesting facts in regard to the farm water supply in Ohio, and Ohio probably is not much different from many other states. The number of homes surveyed was 18,469, showing approximately 87% getting their drinking water supply from wells, 12% from streams and 1% from cisterns. Sixty percent of the homes had cisterns for their soft water supply. Water was carried into more than 65% of the farm homes and the average distance that the water was carried was 74 feet.

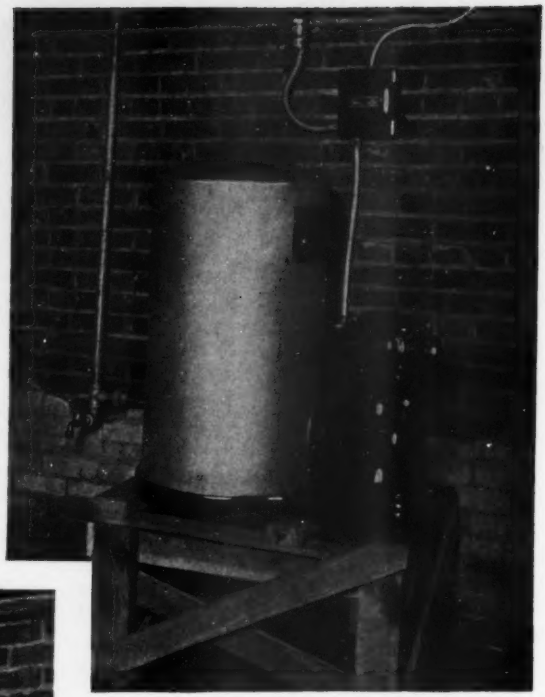
Many of the farm homes that are now without water under pressure could have it if they wanted it badly enough. Water under pressure in the home and about the farmstead means so much and the cost is very, very small. Some of the advantages should be mentioned, although a complete discussion cannot be given in this article. The electric water system is one of the greatest if not the greatest labor saver in the home. The work of cleaning, laundering and food preparation is so much easier with hot and cold water under pressure.

Running water improves health. Public health records show that the introduction of running water in the home improves the health more than 50%. If electricity does nothing more than bring running water into the home it is worth every cent it costs, even though the total value may not be measured in dollars and cents.

An abundant supply of water is also very important about the farmstead, not only for the livestock, and plants, but also for many of the production processes. Water under pressure also affords considerable fire protection, particularly if the fire is discovered before it has much of a start, and the water is available at the turn of a faucet.

Let us take a little time and see what it means to have water under pressure in the home and about the farmstead. On Mr. Leo Colemans' farm, which was one of the 13 farms on the Marysville, Ohio, experimental line, an average of 177,000 gallons of water is used annually. Of that amount 150,000 gallons is well water and 27,000 gallons is cistern water. To pump that amount of water, a total of 278 K.W.H. of electricity is used per year, 246 K.W.H. being used by the deep well pump and 32 K.W.H. by the cistern or shallow well pump. The average power cost for pumping 177,000 gallons of water per year on Mr. Colemans' farm is $11.68. If a man were able to pump 300 gallons of water per hour by hand, he would have to pump at that rate for 590 hours or 59 ten-hour days per year to supply the amount of water used on Mr. Colemans' farm.

Right. This shallow well system has been pumping all of the soft water used in the Martin Volrath home for almost 10 years at a power cost of ½ cent per 1,000 gallons of water.



Below: A supply of hot water is next in importance to water under pressure. This electric heater operated on off-peak hours furnishes an unfailing supply of hot water for the Leo Coleman family. From 3½ to 4 gallons of hot water are furnished by 1 K.W.H. of electricity.

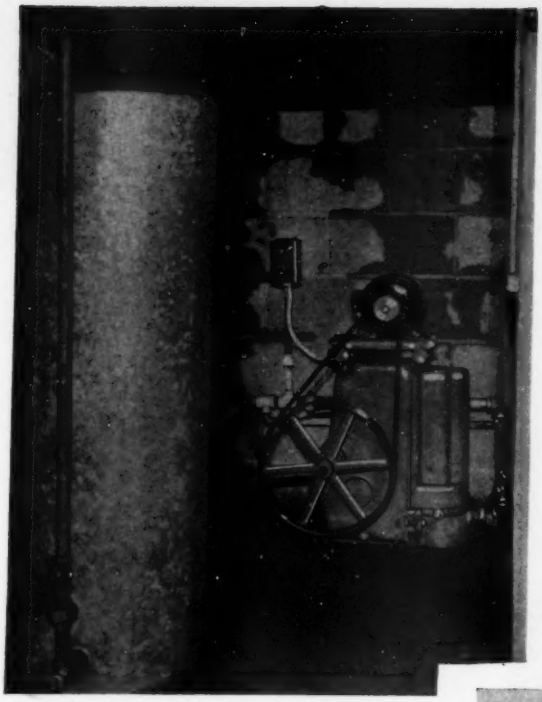
I am sure all of us have been on the "business end" of a pump-handle, and are quite familiar with electric power. If the person pumping water by hand is paid at the same rate as the cost of electric power, he would have to work at the rate of slightly less than two cents per hour.

Certainly those figures secured under actual farm conditions, are impressive, but there is yet another part to that same story. With proper plumbing, the electric water system not only pumps the water, but also makes it available at the turn of a faucet wherever it is to be used, and the waste is carried away. If only 1,000 gallons of water per month is used in the home, that represents a total of 12,000 gallons, or 50 tons per year. The Federal Housing Survey showed that water is carried an average distance of 74 feet. That means that where the water was pumped and carried by hand the person doing it, in addition to spending four ten-hour days in pumping the water, traveled a distance of 100 miles to carry the 50 tons of water. In too many sections there seems to be an old fashioned custom permitting or requiring the women to pump and carry the water which is used in the home.

With an automatic electric water system, it is now possible to have water service in the country comparable to city water service. Other types of power, such as hand, wind or gasoline engine power may be used to put water under pressure in the home and about the farmstead, but none of them is as desirable, free from trouble, so completely automatic, and requiring so little attention as electric power.

Automatic electric water systems have been improved and the prices have been reduced. Shallow well systems can be purchased for $50.00 and deep well systems for less than $100.00. The shallow well system, of course, is limited to cisterns and wells where the water level is never more than 20-22 feet below the pump cylinder. For all other installations the deep well system must be used, in which case the cylinder is lowered into the well so that it is never more than 20-22 feet above the low water level.

The shallow well system is generally located in the basement where the working conditions are usually best, and inspection and care are easy. The pumping head of the deep well system must be



Left: This deep well system furnishes all the well water on the H. L. Mowrer farm, R.F.D. No. 2, Wooster, Ohio. Note that the well pit in this case is a part of the basement which makes an ideal installation. A hole directly above the well has been left in the cover so that the pipe may be easily withdrawn.

Below: The deep well pump on the Leo Coleman farm is protected by this well pit and concrete cover. The tank is located in the basement. The temperature was about 5 degrees below zero, and the pump was operating when this picture was taken.

located directly over the well, although the pressure tank may be located in the basement. A well pit or well house must be used to protect the working head. In case the well is located within a few feet of the house, it is very desirable to make the well pit a part of the basement, which gives ideal working condition for the pumping head, and makes periodic inspection very easy.

In selecting the size of pump and tank the operating conditions must be taken into consideration. The tendency seems to be towards the use of smaller storage tanks but larger capacity pumps. Pumps with capacity of from 300 to 600 gallons per hour are now commonly used with storage tanks of from 30 to 40 gallons capacity. Some of the smallest home water systems have tanks of only several gallons capacity, so that the systems operate practically every time any water is drawn.

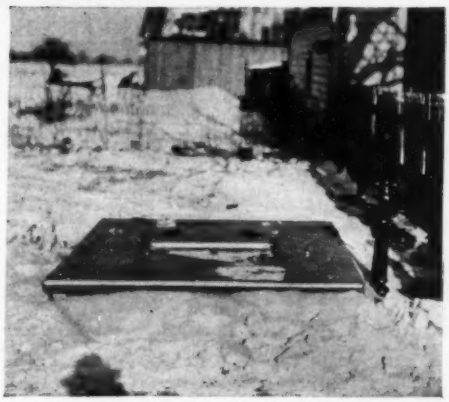
A fresh water tap may be installed on either type of system regardless of the size of the tank, making fresh water available directly from the well as soon as the water that has been standing in the pipe has been drawn out.

No water supply system can be considered to be complete unless provision is made for hot water also. Electricity furnishes a very satisfactory method of heating water.

An electric motor and pump jack is much superior to hand pumping, wind power, or the gasoline engine, but it is not nearly as good or convenient as the automatic electric system. By the use of valves and three and four-way switches, placed at the well, in the kitchen, and other places, water may be had at those places at the turn of a switch. A relief valve should be included in the system so that no damage would be done if the pump jack were operated before the faucet is opened or after it is closed.

Many systems are now equipped with a thermal overload switch to protect the motor in case of overload. If the system is not so equipped it is recommended that one be installed. The cost will be about $2.00, and it may save the price of a new motor.

Follow closely the instructions for the

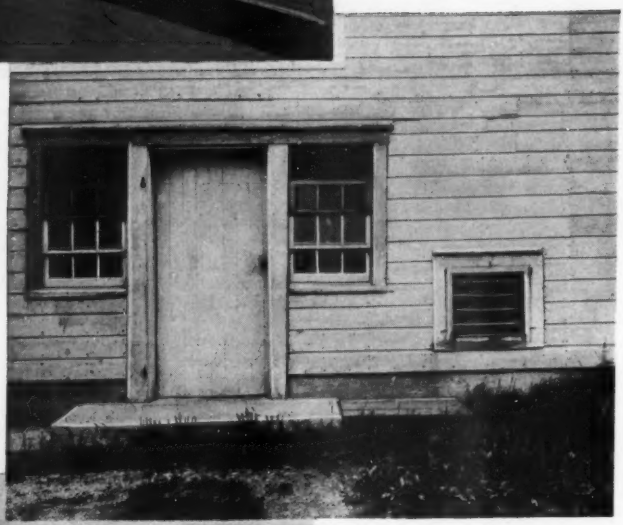


installation and care of the water system, for efficient trouble free operation of the automatic electric water systems.

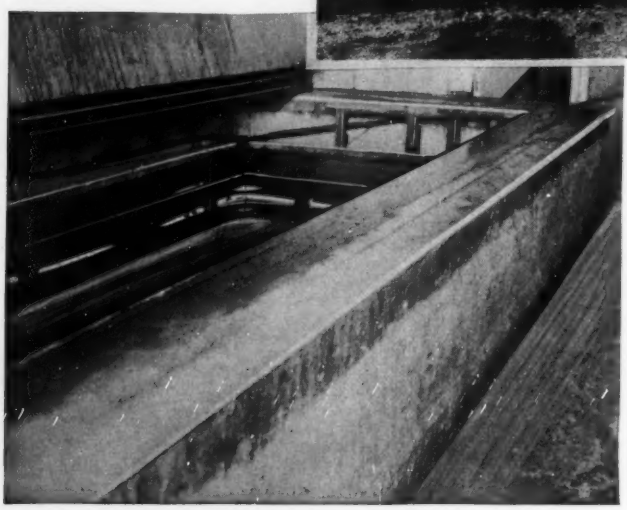
Remember that your family deserves the advantages of running water, and that in the final analysis, if you haven't it, you will pay for it anyway, by inconvenience, extra labor, sickness, lower production or poor quality product.

Running water improves health. Public health records show that the introduction of running water in the home improves the health more than 50%.

Good insulation is one of the construction factors essential in securing economical operation. Four inches of cork was used for insulation in this tank.



A ventilating window adjacent to compressor coils or condenser is necessary for low cost operation.



The milk tank is located against the barn wall, a location which affords protection and means reduced operating expense.

MILK COOLER ECONOMY

By B. A. JENNINGS

Extension Assistant Professor, Department of Agricultural Engineering, Cornell University, Ithaca, N. Y.

THE amount of electricity used to cool a can of milk varies with each installation. Where special electric meters have been installed to measure the amount of current consumed, we find a variation from .7 to 25 kilowatt hours for each can of milk cooled. The question arises—Why?

Some of the more important factors which affect current consumption of electric milk coolers are: The temperature to which the milk is cooled and the quickness of cooling; the location of the milk house and the location of the milk tank within the milk house; the amount of insulation used in the milk tanks; the ventilation of the condensor coils, and the size of the milk cooler.

Lowering the temperature to which the milk is cooled increases the amount of current used. Not only must the compressor extract this extra heat from the milk, but with the cooler set for the low temperature it works less efficiently. That is, it will take considerably more electricity to extract the heat from a can of milk from 40° to 35° than it will from the 60° to 55°. The quickness of cooling milk is similar to the temperature. To cool quickly, the temperature of the water must be much lower, and more ice must be formed on the coils. Rapid cooling increases the cost of cooling.

The location of milkhouse and the location of the milk tank determines, to a large extent, the amount of heat that will leak into a tank. If the milkhouse is on the sunny side of the barn, and if the milk tank is on the sunny side of the milkhouse, it means that extra heat will leak into the tank. Heat which leaks into the tank must be removed by the compressor, which means extra running. The ideal location for a tank is on a protected side of the milkhouse.

Insulation is used to decrease the amount of heat which leaks into the tank. Good insulation for milk tanks requires at least 3 inches of cork on the sides and on the bottom and 2 inches of insulation in the cover. The cover should fit tightly and be well sealed with a gasket. Insulation, to be effective, must remain dry. It is essential that insulating material be thoroughly waterproofed to prevent its absorbing any moisture.

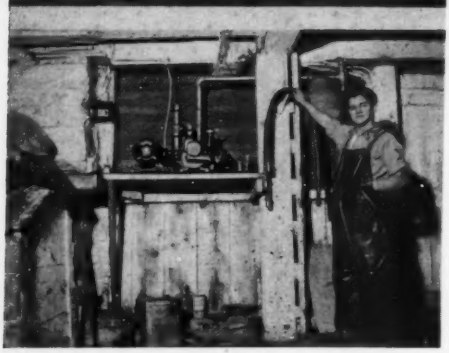
Adequate ventilation of the condensor or the compressor coils is necessary for low cost of operation. To ventilate the compressor there should be an opening through milkhouse directly in front of the compressor coils and fan. The fan can then draw outside air in past the coils and force it out at the roof ventilator. Some fans operate in the opposite direction. In this case, they push the warm air out through the ventilation opening. If the compressor is so placed that it is impossible to get an opening directly in front of the fan and coils, it is advisable to build a duct leading to an outside wall.

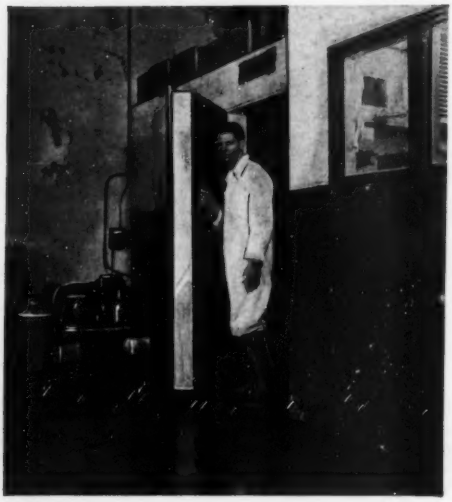
Another factor affecting the cost of cooling milk is the size of the cooler in comparison to the number of cans of milk cooled. If the refrigerating machine is too small the cost per can will be low. However, this point should be remembered, that the milk will be cooled slowly. If the machine is oversized the cost will be higher, but it will cool the milk in less time. The following are the recommended sizes of refrigerating units and tanks, based on the maximum number of cans of milk produced during July, August or September: The size of a refrigerating unit is measured in the pounds of ice melting equivalent per hour, or abbreviated, the I.M.E. per hour. A refrigerating unit should have a capacity of from 4 to 5 I.M.E. per hour for each can to be cooled. If 4 cans of milk are to be cooled, the machine should have an ice melting equivalent of from 16 to 20 pounds per hour. Under farm conditions, most milk coolers equipped with ¼-horsepower motors have an I.M.E. of approximately 11 pounds per hour, and those with ⅓-horsepower have a capacity of 16 pounds per hour.

If the machine has a rating of 11 pounds I.M.E. per hour it is satisfactory for 2½ to 3 cans of milk, while the larger unit with the rating of 16 pounds I.M.E. per hour is satisfactory for 4 cans of milk. The I.M.E. for any machine can be obtained from the manufacturer or dealer of the milk cooler.

The size of the tank is also important. If the tank is too large there will be an excessive amount of heat leakage into the tank. If it is too small, a large amount of ice must be formed on the coils, which again increases the cost of cooling. A happy medium is a tank of such size that there will be 450 sq. in. of floor area in the tank for each can of milk to be cooled.

Economy in cooling milk may be summed up in a few words: Place the milk tank in a protected place, have adequate insulation, provide good ventilation for the compressor, and buy a refrigerating unit and tank of the correct size for the cans of milk to be cooled.





PENNSYLVANIA

By R. U. BLASINGAME

LAST May I had the privilege of visiting some very interesting electrified farms in Northeastern Pennsylvania. Then again in July I made a similar trip in the Poconos to study the application of electricity on the rough, hilly dairy and poultry farms in Wayne and Pike Counties. This territory is served by the Pennsylvania Power & Light Company which is noted for its energy and success in helping farmers to make the best use of electric service. In the Hawley District, for example, the farmers are using an average of about 1400 kilowatthours per year, yet the Pocono country is not considered the best farming district in Pennsylvania.

Some of the farmers served are making a nice profit through the use of electricity. For instance, there is the W. J. Bone dairy farm at Gravity, Pennsylvania. Mr. Bone produces from 9 to 13 ten-gallon cans of milk per day and has a market for it which offers a premium for low bacteria count. By good management and the use of an electric refrigerator and water heater, he is able to secure this premium. In the month of June this year the premium alone amounted to $90.06 and his bacteria count was only 8.236.

"That extra money" said Mr. Bone, "will soon pay for the milk cooler, the water heater, my deep well pump and the drinking bowls in the barn, and pay the electric bills besides. Of course I might be able to get the same results with ice for cooling, with a steam boiler for sterilization and with an engine for pumping water, but it would take an extra man to do the work that way. Then the man's wages and board would about equal my premium for low bacteria milk. The reason I use electric light, heat and power in my dairy business is because electric equipment is automatic, accurate, economical, and saves the time of one man."

Then there is Mr. Wm. Garrett of Honesdale. Though he has had electric service only a year he uses a 7½ horsepower motor to saw wood, grind feed and fill his two 12'x36' silos. When he wired his barn he followed the advice of the power company representative and put in #00 wire and a 10 KVA transformer. This gives him plenty of capacity to use a current in any way he wishes without fear of low voltage or any trouble incident to inadequate wiring.

By grinding the grain produced on his farm Mr. Garrett makes a considerable saving, as he feeds 17 dairy cows and some young stock, and

Top: Electric brooder on the Henry Hocker farm near Milanville. Upper Center: A view of Mr. Hocker's poultry house. Lower center: Electricity assists Gus Coccodilli of Lake Ariel to operate his dairy on an economical basis. Bottom: Two electric refrigerators are used by Mr. Coccodilli for milk storage.

PROGRESS

his bill for feed would be high if he had to buy it. He also recognizes the fact that milk is 86% water and that the more convenient he makes it for his cows to get an adequate supply, the more they will produce. He has therefore put drinking bowls in his dairy farm.

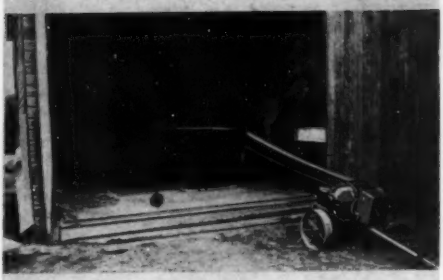
Mrs. Garrett told me that her 400 hens laid more eggs in the electrically lighted poultry house than they ever did before the coming of electric current.

Another Honesdale farmer making successful use of electric service is Mr. W. Bauman. He produces and bottles about 100 quarts of milk per day and sells it on a retail route in Hawley. His milk house is fully equipped with electric devices for handling milk and is a model for cleanliness and order. For all uses, his electric bill is only $10.00 or $12.00 per month.

As one approaches the Gus Coccodilli farm near Lake Ariel, Pennsylvania, one sees every evidence of a small dairy plant in operation. Mr. Coccodilli produces and bottles about 430 quarts of milk a day which he sells in near-by towns. His milk house is built of concrete blocks with concrete floor and with the walls plastered inside. In this building there are two refrigerators, bottle washer, a pasteurizer, milk pumps and water pumps. A boiler provides steam for sterilization and hot water for washing utensils. According to Mr. Coccodilli the operation of his milk plant is on an economical basis largely because electric light, heat and power are available in unfailing supply and at favorable cost. Mr. Coccodilli was one of the first farmers in his community to sign up for electric service.

Near Milanville just across the Delaware River from New York State, Mr. Henry Hocker owns and operates the Wayne poultry farm. He is an outstanding farmer in his community and in 1934 was selected as a Master Farmer. He was also appointed coordinator on baby chicks under the NRA code. Mr. Hocker has learned the economy of making generous use of electric service in the poultry business. Just last year he installed a new electric incubator and hatcher.

Throughout this territory I found that the aid and advice of the power company has helped the farmers to get the greatest value from the service and that the progressive attitude of the farmers has encouraged the utility to further extend their lines and to enlarge their personnel to take care of the increased load and responsibilities.



Top: Electrical household equipment helps Mrs. Wm. Garrett, Honesdale, with her household tasks. Upper center: The portable motor does the feed grinding as well as silo filling and wood sawing on the Garrett farm. Lower Center: W. J. Bone of Gravity, and his electric milk cooling equipment. Bottom: Bottling equipment which helps Mr. Coccodilli bottle approximately 430 quarts of milk daily.

HEAT *in a* HURRY

By VERA B. MEACHAM

Twelve-minute biscuits are light and brown.

ANN took another bite of the delicate, spongy angel food on her plate and looked across the table at Marjorie.

"You never made this cake in your lumbering old ark of a stove, Marj. Where did you get it?"

Marjorie beamed. We have been friends since school days so we are quite used to having the forthright Ann blurt out what she thinks.

"I made it myself, but I've got a new stove, Ann. It's an electric."

"So Jess finally got you cooking with electricity," said Joan Murdock.

Jess is the home economics advisor for our local utility company.

"I'll be letting you know a week beforehand when I come over to lunch after this, so it will be ready when I get there."

"Why, Joan Murdock," exclaimed Marjorie indignantly, "You could drop in here at eleven thirty any day, and you'd have your lunch by twelve. I—"

"Don't let her get you excited, Marj," soothed Ann. "What does Joan know about electricity anyway, living way off there on the other side of nowhere? If you can bake a cake like this in any stove, I'm all for it, sight unseen. You keep right on buildiing your fires with electricity."

"You're right I will. When Joan or anyone came in here unexpectedly before, I used to rush out in the kitchen first thing to see if there was any fire left. There hardly ever was. And if I had to kindle it, oftener than not, I'd have to go out and pick up a basket of chips to get it going. Then I'd fume around waiting for that whole stove to get hot. There was a stove that took its time, if you want to know it."

Ann nodded agreement. "I do know. I've got its twin. You can't hurry those boys."

"And besides," Marjorie went on, "I always hated building fires. I wouldn't use kerosene on them, and they were a job for me. Since I've had this new stove and can come down every morning and build up a fire, a big fire or a little fire, which ever I need, with no more work than turning on a light, I feel just as Dr. Einstein says he does when he turns the knob of a radio, as though I were 'assisting at a miracle.'"

"It does seem marvellous to get a fire that way," admitted Joan, "But, honestly, I've always heard that the fire is slow after you do get it."

The three of us, Marjorie, Jess and I burst out at her together, then stopped, laughing at the other's eagerness.

"It is funny how folks hang on to that idea of electric ranges," I said. "Take cars, now. In the summer of 1920 E. R. and I drove down to Clemson College. It took us ten days to get from Wisconsin to South Carolina, and we never got that little old Ford above 15 miles an hour. We'd have been afraid to if we could.

"Last summer we started from Madison late Friday afternoon, between three and four; we dawdled around Asheville several hours Sunday, and stopped just outside the college that evening. Now, if you stop to think about it, even the folks who don't drive, never go around shaking their heads and declaring that motoring is slow business because some one they know used to have a Model T Ford. They recognize and accept change and progress."

"It's different with cars running around in front of you all the time," objected Joan. "I don't know how I could tell that a new electric range is fast. I suppose that is what you are getting at."

"Just the same way, if you are interested enough to find out," said Jess. "They haven't any speedometers, but you can watch them and time them."

"Last Sunday the Keysers dropped in here about five o'clock," put in Marjorie. "I hustled out to the kitchen, stirred up some biscuits, opened a can of soup and plugged in the percolator. In just twenty minutes by the clock, they were raving

about that soup, drinking coffee and eating hot biscuits and jam."

"Biscuits in twenty minutes?" Joan's eyebrows expressed polite disbelief.

"I can bake them in twelve minutes from the time I put them in the oven and turn the heat on," insisted Marjorie.

"Jess, you ought to drag that woman to one of your cooking schools," laughed Ann. "Some day the electric line will come down her road, and if some thing isn't done about her, she'll go around telling her neighbors its quicker to light a match."

"Oh, hush," said Joan, half angry, half amused at Ann's teasing. "As a matter of fact, we are getting a line in the spring, but I never thought of trying to cook with electricity."

"I think you are awfully old-fashioned about it," said Marjorie, "but surely you'll come out and just look at my stove anyway."

We all pushed back our chairs and followed her eagerly to a kitchen that had gone entirely modern since I last saw it.

"Lovely," we chorused as she opened the door.

A Modern Electrified Kitchen

Directly ahead of us under a double casement window was the dishwasher sink. On each side were work shelves covered with dark green linoleum that extended up the side wall to meet the cabinets over the counter. On the floor was a patterned linoleum with green the color that caught the eye. All of the wood work was ivory. The oiled silk curtains at the windows repeated the green of the table and floor. At our left as we came through the door stood the refrigerator, and on the other side of the room, but a little farther down, was the electric stove in matching ivory enamel.

"I'll tell you what, Jess," suggested Marjorie when we had finished admiring the room. "Let's cook something so Joan can see for herself how fast electricity is."

"Ridiculous," protested Joan. "We've just had lunch. You don't want to go right to cooking again. It isn't worth while, really. Marj's stove is pretty, but I know it would be too slow for me."

"I wish you would, Jess," said Ann. "I'd like to see you. I don't believe electric ranges can be as slow as Joan thinks or folks wouldn't be buying them up one road and down the other. If we were a cooking school, and some one had jumped all over electric ranges like this, what would you do?"

"Show you," answered Jess pleasantly.

She did not indicate by so much as a look that she resented Joan's intolerance, but I suspected that she would be glad enough of an opportunity to set her right. After all, it was her work, and no woman likes to have her friends going around making ignorant attacks on equipment she knows by heart.

"Sometime this afternoon, I've got to make a cake for Beth to take to a 4H Club party tonight," said Marjorie. "I might as well make it now."

That is the way it started. Ann and Marjorie hurried in to clear off the table. They packed the dishes away in the dish-washer, while I set to work peeling half a dozen good sized potatoes. I cut them through once and put them in a low, broad kettle with a good fitting cover.

"Here you are Joan," said Jess, as I finished. "Gail got these potatoes ready and I'm putting half a cup of water on them, enough to cover the bottom of the pan well, and turning this burner on high. It's just two o'clock; make note of that."

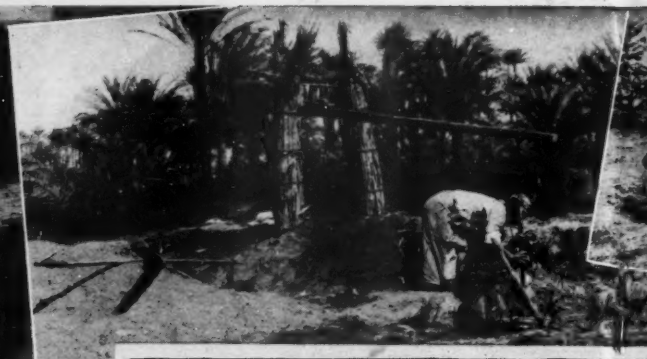
"Half a cup of water. Are you crazy? They'll burn before they ever start to cook."

"Oh no. You must consider the difference in the way we use this heat, Joan," said Jess. "You see it is applied directly to the bottom of this pan. The sides stay comparatively cool. While the cooking is going on, that little water turns to steam and instead of pouring out into the kitchen and disappearing in the air, much of it stays inside. It condenses on the tight fitting cover of the pan, and drops back to be made into steam over and over again."

While Jess was talking to Joan at the stove, Marjorie closed down the cover of the dishwasher, and began busily getting out ingredients for her

(*Continued on page* 18)

You can smile at unexpected guests with heat in a hurry at your fingertips.



IRRIGATION THE

Upper left: An archimedean screw used in irrigation in the Nile delta, Egypt. This is one of the most efficient of the ancient methods employed.

Above, left: A shaduf, or primitive pump, used in the Nile Valley. It consists of a lever arrangement with bucket on one end and weight on the other.

Above, right: In Tunisia, Africa, the camel furnished the power for drawing water from wells or ditches for irrigation purposes.

Upper right: Modern equipment in Persia i the Naour. Horses operating pow

Left: Chinese peasa working their foot-op gation paddles to wate field. A great portion tivated land of Chi irrigation for rice

Right: A Japanese r lifting water from a paddy field th a It is a slow, tedious time and muscles ar

IRRIGATION IN

HE FOREIGN WAY

ht: Modern irrigation in Persia is known as . Horses furnish the erating power.

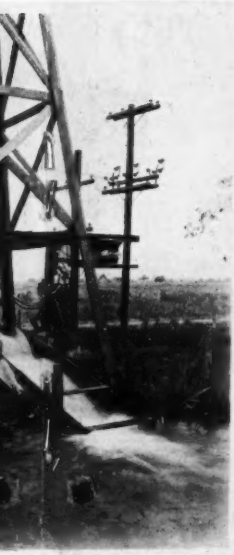
nese peasant farmers heir foot-operated irri- dles to water their rice reat portion of the cul- nd of China requires on for rice crops.

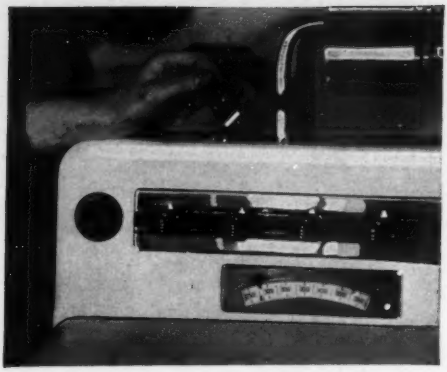
Japanese rice farmer er from a ditch to his th a hand wheel. tedious method but muscles are cheap.

Lower left: A sakieh, or cow pump, is another method employed in the Nile Valley at Memphis, Egypt. Water is lifted by a bucket pump.

Lower center: In the U. S. A. the electric motor furnishes energy for supplying an abundance of water required for irrigation.

Lower right: Two native boys are operating a treadmill and lifting water from a pond to an irrigation ditch near Bangkok, Siam. Rice is the principal crop.





The temperature control and the minute minder on a new range.

cake. "I'm going to start mixing it, Jess," she said, breaking eggs into the bowl of her electric beater. "I guess you can turn the oven on any time."

"What temperature do you want?"

"400," said Marjorie over her shoulder. She had plugged in the beater and as it whisked the eggs to a yellow fluff, she and Ann measured out sugar and flour to add to the cake in their turn.

"Look, Joan, see how these potatoes are steaming?" said Jess. "They've been on just ten minutes. I'm going to turn the current to low for ten minutes now; then off entirely for another ten."

Joan looked skeptical, but she refrained from saying what she thought this time.

Marjorie was folding the flour into her batter with a flat beater. We stood around and talked while she finished it up, dropped in the flavoring, and poured the batter into a long shallow pan with waxed paper in the bottom.

"How about the oven?"

"It's already up to 400," answered Jess. "It just clicked off. Shall I set the minute minder for you?"

"What on earth is a minute minder?" asked Ann.

"It's a little dingus that will time any cooking process for you so you can hustle about with your housework and still not forget when the cake is to come out, or the vegetables will be done. You can set it for ten minutes, an hour, whatever you like. When that time is up, it will ring a little bell that calls you back to the stove."

"I declare," said Joan with unwilling admiration. "That is handy, isn't it? And you don't have to do a think to that oven while the cake is in? Turn it up or down or anything?"

"Not a thing. The thermostat takes care of that."

For the next few minutes we fell to gossiping about the dishwasher and Ann's new grand-daughter and forgot all about the time—all but Jess. She had stayed close to the stove, and I heard her snap off the current under the potatoes. She kept an eye on the clock.

"The potatoes should be coming off now," she reported at last.

"They'll never be done," Joan shook her head. "I know potatoes if I don't know electric ranges. Turning the heat off, humph."

"'Twill be funny if they aren't," said Marjorie with some spirit. "I cook them that way every day—carrots, and peas, and beans, too. Even beets."

"See for yourself," Jess lifted off the cover and pushed the kettle toward Joan. "Take that fork and try them."

Joan prodded one of the potatoes somewhat gingerly. The fork slipped in readily enough. She stuck it into another. It fell apart at a touch.

"Dry and mealy, and thoroughly done, aren't they?" Persisted Jess with a twinkle in her eye.

"They certainly are," acknowledged Joan, slowly. "They are done, and you didn't put them on that burner more than half an hour ago, and you turned the fire down, and then off entirely, too. I would never have believed it if I hadn't seen it with my own eyes."

And I guess she was right. Until she saw it she would not even listen to Jess when she tried to tell her that electric cooking is fast and efficient because the heating units are designed to concentrate all of the heat against the bottom of the pan, giving quick transfer of heat from the wires to the food, because many of them are insulated to prevent the loss of heat, and because they built with enough wattage to produce a lot of heat at once.

"All the heat you will need for cooking any food, but not any to waste," as Jess says.

After all foods can use heat only just so fast. We could not have cooked those potatoes any faster, no matter what heat we had used, unless we had cut them up into little pieces or cooked them under pressure.

There is a good deal more heat in these units than we need to finish up most cooking, Jess pointed out. It is actually faster than we can use. That is why she turned the switch to low and then off entirely. There was enough heat stored in that burner to keep the potatoes boiling to the end.

"How long will it take to bake the cake in that oven?" Joan asked.

"Just as long as it would take it in any 400 degree oven. And you saw how long it took to get

(*Continued on page* 30)

On High ten minutes, on Low ten minutes. Then off for ten and the potatoes are done.

America welcomes this safe, sure way to buy a refrigerator

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THE NEW FRIGIDAIRE

WITH THE "METER-MISER"

5 YEARS PROTECTION
MEETS ALL FIVE STANDARDS FOR REFRIGERATOR BUYING
. . . and Proves it!
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Quiet · Unseen Trouble-free

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Send for free 32-page booklet, beautifully illustrated, describing in detail the New Frigidaire with the Meter-Miser. Frigidaire Corporation, Dayton, Ohio.

ELECTRICAL HOUSEKEEPING

Conducted by
GAIL MEREDITH

WHEN YOU MIX WITH A MOTOR

WHEN you buy an electric mixer it is only good sense to plan right at the outset that you are going to get all the help from it you can. It should always be ready for work, and it ought

to do for you all of the jobs it can do better and faster than you can.

If it is more work to get the mixer out than it is to do the work by hand, there may be something wrong with your kitchen planning. If you are still mashing potatoes with a fork and creaming shortening with a wooden spoon, it looks to me as though you are wasting your strength while you let the mixer stand around doing nothing.

Perhaps you would find it convenient to have a special cabinet for the mixer, where it is always in easy reach. I keep mine on one end of my work shelf, with the cord plugged into its own electric outlet. The only time I take the cord out is when I want to borrow the outlet for my roaster. It is a double outlet, but the refrigerator is permanently plugged in below. If I had had just a little more foresight I would have had two double outlets on that wall, and spared myself the inconvenience of having two plugs both clamoring for the same outlet at once.

Locate Appliance Outlet for Convenience

When I first got the mixer, eight years ago next Christmas time, I had to plug it into a lamp socket at the end of a drop cord. That left much to be desired, for I could stall the motor on jobs it does without a murmur since it has been plugged into a convenience outlet, where it belongs.

In order to get the most from any mixer you have to find out what it will do. Naturally enough, you look to the manufacturer of your mixer to tell you this. Then, after you have the machine in your own kitchen, your study and experience will quickly show you what operations you can best turn over to its power.

If the mixer at your house is one of the larger machines, it will knead bread with a dough hook cut shortening into the flour with a pastry knife, cream butter and sugar, and beat up batter with

The wire whisk makes a milk shake in a hurry.

its broad, flat beater, and whip eggs, cream, and salad dressing with its wire whisk.

Big or small, all of the beaters will mash vegetables to enviable lightness. When I am going to have mashed potatoes, I turn the heavy tinned mixing bowl that I mash them in over the cover of the potato kettle and get it hot clear through. This keeps the potatoes steaming hot until I serve them. If I have to keep them overlong, I put the bowl in a dish of hot water.

If yours is a smaller mixer, you can heat the metal bowl, set the glass bowls in warm water, or take the heater from its standard and mash the vegetables on the stove right in the kettle where they were cooked.

This just hints at the work these mixers are built to do. Their motors turn devices for slicing and shredding vegetables, a reamer for fruit juices, a grinder for coffee and cereals, a can opener, a potato peeler, a pea sheller, a buffer for silver,

The motor does the work in preparing the dinner vegetables.

SOIL and TOIL

Banished from the Kitchen Range

IMAGINE the difference it would make in your household to own a stove that is bright and shining—as easy to clean as a china plate. Think of having pots and pans that always gleam—walls and curtains that stay fresh and gay—a kitchen as cool and livable as any other room in the house. All this is a part of Miracle Cookery. It's the new way that takes the soil out of cooking.

And the toil, too! For Miracle Cookery enables you to spend the whole day away from the kitchen and then return just before dinner time to find your meal all ready and waiting for you. All you do is put the food in the oven—adjust

★ ★ ★

VIRGINIA FRANCIS

the automatic timer clock and then go about your other work while this wonderful Chef's Brain takes complete charge—turns the oven on and off.

Ask your electric company to demonstrate the Hotpoint Electric Range.

SEND FOR FREE BOOKLET, "Your Kitchen Modern." Address Virginia Francis, care of Edison General Electric Appliance Co., Inc., 5610 W. Taylor Street, Chicago, Illinois.

Five Reasons Why

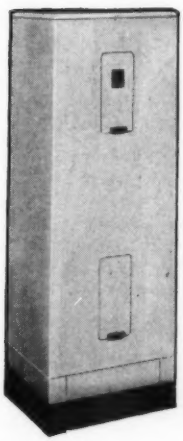
CLEAN—Electric Cookery is clean cookery—there's never a particle of soot given off.

COOL—Calrod's glowing heat is concentrated on the food—kitchens stay cool.

FAST—Hi-speed Calrod units in a Hotpoint Range assure you quick heat.

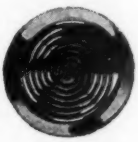
BETTER RESULTS—Food preparation is simplified. Better results are assured. The Chef's Brain, automatic timer clock, turns the oven on and off automatically. Assures a baking triumph every time.

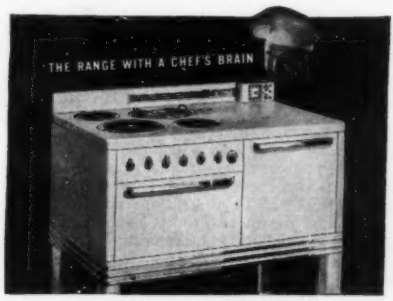
ECONOMICAL—Best of all . . . you save money. New low electric rates for electric ranges, elimination of cooking failures, and saving on cleaning and decorating bring distinct economies.



The VOGUE—Hotpoint's new, modern style square-type water heater gives hot water every hour of the day or night without one minute's attention from you.

Here is Calrod, Hotpoint's famous hi-speed sealed-in-steel cooking unit. Calrod brings high speed economy and long life to the electric range and water heater.





Hotpoint

ELECTRIC RANGES and WATER HEATERS

and a stone for sharpening knives. That is quite a lot of the work you have to give some strength to in getting the meals, isn't it?

After you have learned what your mixer will do, the next step is getting the best results. For most operations these follow almost automatically, but the mixing and beating does need your watchfulness until you know how long, how hard, or how fast to beat different mixtures.

Some folks forget, in their enthusiasm for these new machines, that a motor spins the paddles through the batter faster than they could ever wield a spoon, and they are apt, just at first, to overbeat some mixtures.

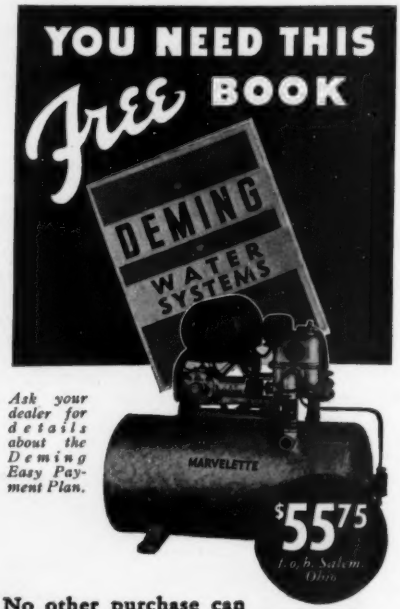
That does not make the best cakes.

You can spin away at the butter and sugar with small danger of overdoing it. You can let it go when you are beating whole eggs, or egg yolks; but once you begin to add the flour and liquid you have to slow down. These should be added quickly and with as little beating as possible after you get the flour in.

When you are starting your mixing, you can help the beater considerably by using a broad rubber scraper to push the mixture down the paddles and off the sides and bottom of the dish.

If you will take pains to learn to use it well, if you will put it to work full time, if you keep it handy, your mixer will give you an extra pair of hands in the kitchen—tireless, clever, willing hands; it will give you a double while you cook.

The buffer attachment will brighten your silverware.



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FOR A • • •

CLEAN SWEEP

THE other day a woman I know said she had been noticing lately how many women with good vacuum cleaners in their hall closets still cling to the old broom technique when cleaning a room. They go over the rugs first, run the dust mop on the bare floors next, and finish by flicking the dust off the furniture onto the floor.

If you stop to think about it a minute, you can see for yourself that this is the wrong way round for cleaning a room with a vacuum cleaner. It is certainly better to dust off the furniture first, use

Give the cleaner time to get out the sand and grit tramped down into the pile of your carpet.

the dust mop next, and then go over both rugs and mop with the cleaner.

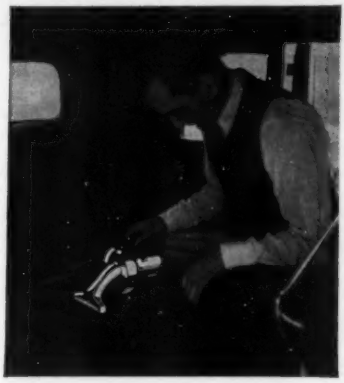
Not that the matter ends there, by any means. There is not the faintest shadow of an excuse for letting a cleaner idle around in the closet when there is work to do. It has not done all it can for you when it has cleaned carpets and rugs,—not by a long shot.

By lowering the nozzle of the cleaner you can make it do a good job of picking up dust on bare floors and linoleum. You can run it up against the molding at the bottom of the baseboards and let it pick out the dust that collects so easily there.

You can further extend its usefulness with the new dusting tools. They are light and flexible and easy to handle. With one brush on a long extension tube, you can clean the top of door frames and windows or dust the picture molding. With another, soft bristled and round, you can clean your curtain as they hang at the windows and dust off lampshades of paper or silk. There is one tool with a narrow slit of an opening that you can push down into the unplumbed depths of upholstered chairs. It won't bring up scissors, jack knives or nail files, but it is grand for getting out dust and crumbs. It keeps the furniture so clean that it offers a much less attractive breeding place for moths.

The hand cleaners that are so effective for the flat surfaces of upholstered furniture, so handy for stair carpets, and such an improvement over a whisk broom for cleaning out the automobile have added new dusting tools of their own. One has a long tube with a nozzle on the end that is equally effective in dusting draperies and door casings, in going over the top of the mop board, or picking up scraps of litter scattered on the floor.

The small cleaner in the picture has an attachment for blowing the fumes of a dichloride moth crystal into the crevices of furniture.



For keeping the family car spic and span.

Both big and small cleaners have blower attachments for getting the dust out of radiators, off bed springs, and from the top of a row of books.

On the new cleaners you see in the shops you will find a convenient finger tip control. They move easily and turn without balking. On most of them there is an adjustment to raise and lower

MILK COOLING SPEEDED UP
With the New ESCO "NI-AG-RA"

The New Esco "NI-AG-RA" with the AUTOMATIC WATER LEVELER is the very last word in Electric Milk Cooling Equipment. Icy cold water is maintained at constant level and circulates until your milk is cooled to proper temperature of 50° or below.

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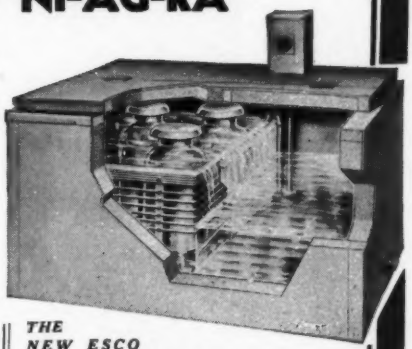
An Esco Electric Milk Cooler will pay for itself from the very start. Thousands of dairymen have testified that an Esco Cooler is a money making investment.

WRITE TODAY . . . get FREE Booklet telling you how you can get better milk and make more money.



THE NEW ESCO "NI-AG-RA" Electric MILK COOLER GIVES— Rapid Cooling of Milk to 50° or lower in one hour . . . Automatic circulation . . . Constant water level up around neck of can . . . Highest efficiency . . . Economical operation.

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ESCO IS THE ORIGINAL PATENTED MILK COOLER

the nozzle so the machine can clean bare floors and get the buried dirt from a thick piled rug, too. Some of the cleaners have two speeds, some have headlights. Some are built low to get under furniture easily.

They need very little care to keep them in good running order. Regular oiling, clean brushes, and clean bags are their chief demands. Oil, brushes, and bags, and the most important of these is bags.

For Operating Efficiency

Your cleaner will not pick up dirt unless there is a steady flow of air through the bag. When the bag holds a great mass of dirt, when the holes in the cloth itself are clogged with dust, you hinder the flow of air and cut down the efficiency of your cleaner.

The men who make them tell you to empty the

(Continued on page 28)

THE WORLD'S MOST BEAUTIFUL
REFRIGERATOR
ONLY THE SHELVADOR offers this extra, usable space, this convenience and time - saving. Just open the door! There, at your finger-tips, are your most - often - needed foods. No reaching. No searching. No soiled sleeves or mussed - up foods. In ordinary refrigerators an orange takes the shelf space of a milk bottle. In the SHELVADOR—fully insulated door — an orange takes the space of an orange! These exclusive advantages cost you nothing, so you might as well have them.
And this much more in a Shelvador
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SHEEP SHEARING

From My Point of View

By Clifford Gildner

Michigan 4-H Club Shearing Champion
West Branch, Michigan

IT seems to me that on most farms any young man can put some extra effort and attention into the care and development of the farm flock and make the time and effort pay worth while profits. My father has always had a flock of sheep and they have always seemed to us one of the most important assets of our farm.

We have had a hand shearing machine for a good many years but I first came to know about machine shearing and through it other phases of wool handling through our County Agent. At his suggestion I entered the 4-H shearing school in our County in the Spring of 1933 and learned some of the points of electric machine shearing when Mr. LaVoi, State sheep specialist from the College, brought an expert to us.

I like to shear by electric machine. I find it a lot less work and a lot faster than shearing by hand and it brought me a good deal of fun and profit, especially as I was fortunate enough to win several 4-H and adult prizes.

It is hardly fitting for one with my experience to tell experienced farmers what to do but I can say that I have found electric machine shearing to be one of several advantages to be found in handling wool by the correct, modern methods.

These methods include keeping sheep free from burrs before shearing time, they include proper handling and classing of the wool, tying with paper twine and similar matters on which County Agents and sheep specialists are always glad to advise an interested farmer.

With wool prices better than they have been for a long time it seems to me that more farmers ought to take advantage of the service of a custom machine sheep shearer or else secure a shearing machine for themselves.

If my experience is any indication, most boys on the farm can make a little extra money by learning machine shearing—work that they can do when work at home is not pressing and can get some worth while experience and pointers of real value by entering 4-H or adult contests at the State Fair.

Quite Common

"Bell and Bess are both after that widower. Did you ever see the like?"

"Sure. I've often seen two chickens after the same worm."

Remembering Names

Who hasn't been embarrassed at times because of inability to recall a name?

A certain mine-owner prided himself on the fact that he never forgot the name or face of any man in his employ.

One day, however, when waiting on the platform at the railway station, he recognized a coal miner who was undoubtedly in his employ but whose name he could not remember.

For some minutes he cudgeled his brain, but proving unsuccessful, he accosted the man and, placing a hand on his shoulder, "Excuse me, my man. Of course I know your name but I have often been in doubt regarding the way you spell it. Would you mind telling me?"

The collier regarded him suspiciously.

"S-m-i-t-h," he answered.

ON THE AIR

Conducted by JEROME J. HENRY

Florence Williams A Rebel Once

FLORENCE WILLIAMS couldn't be playing a pro-Yankee girl—Barbara Ware, in "Roses and Drums"—if she hadn't been a rebel once.

As Barbara Ware, Miss Williams takes part in scenes like those her grandparents described to her as a child. Her grandfather, as a boy in Mansfield, Louisiana, often acted as a guide to squads of Confederate soldiers. Her grandmother nursed sick and wounded Confederate soldiers in her plantation home, which had been turned into a hospital.

Before she had been out of high school Florence talked of going on the stage, despite the fact that her parents wanted her to pursue a musical career. One summer she went to a camp in Maine near

Florence Williams whose radio fame comes through "Roses and Drums"

a summer theatre company. After that Florence sang no more scales.

At the end of the summer in Maine she had learned a lot from the plays and players, and found herself a member of the Goodman Repertory Company of Chicago. She later appeared in New York in "Girls in Uniform" and "Call It a Day."

• • •

Ted Husing Featured in Series

ONE time actor, soldier, hitch-hiker, policeman, aviator, and now star sports announcer, Ted Husing, turned raconteur when he started his new series of weekly programs heard every Monday evening.

Husing ranges far afield from the world of sports in his new programs. A keen observer of personalities and events, gifted with a phenomenal memory and a keen sense of drama, he brings to the microphone a wealth of colorful material gathereed during his exciting years in radio. Friends long ago pointed out to Ted that his adventures in radio's most amazing period of development would

(*Continued on page* 28)

LET ME TELL YOU ABOUT
THE WORLD'S SIMPLEST ELECTRIC PUMP

Now... enjoy running water that's really TROUBLE-FREE

WESTCO—the world's simplest electric pump has only ONE moving part. And this ONE part operates without metal-to-metal contact. Think of it—Westco has—

NO Gears NO Valves NO Pistons NO Bearings

In fact, there are NO parts of any kind in a Westco which will wear and cause trouble.

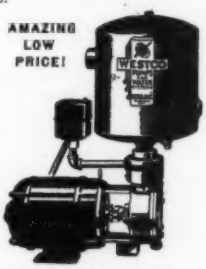
Pumps 38% More Water

To ground floor or basement faucets, a Westco pumps 38% more water than its rated capacity *without increasing electric current consumption.* Guaranteed 28 ft. suction-lift (at sea level). Patented all-bronze Removable Liners assure lifetime service from pump casings. Rust-proof construction throughout. Beautifully finished in durable enamel. Quiet and cheap to operate. Never any expensive repair bills. Thousands of satisfied users. Sold on MONEY-BACK GUARANTEE.

Get FREE Catalog

Fill in the coupon below and mail it today! Free colorful Catalog will be sent. WESTCO PUMP CORPORATION, Davenport, Iowa. Branches and Warehouses: *New York, Philadelphia, Chicago, Los Angeles and San Francisco. Dealers everywhere.*

AMAZING LOW PRICE!



Westco
Pumps and Water Systems

"The Original and Best Known Turbine Pumps in the World"

275 *gallons per hour Westco. Others up to 3000 G.P.H. Larger tanks available. All Westcos fully guaranteed.*

MAIL COUPON BEFORE YOU FORGET

WESTCO PUMP CORPORATION, Davenport, Iowa. Dept. E-4. *Gentlemen: Without obligation, please send me FREE Westco Catalog.*

Name .....

St. or R.R. No. .....

Town .....

State .....

How to MAKE $ GROW

ARE you sure you have all the labor-saving and comfort-bringing electrical servants that you can economically employ on your farm? Do you understand thoroughly just what each of the appliances in the list at the left will do?—how little they cost to own and operate?

First, study our advertising pages, for these companies are especially well-equipped and anxious to help you.

Further information about any of the items listed or any other applications for electricity will be furnished at no cost or obligation to you, if you'll fill out and send us the enclosed coupon.

FOR MODERN HOME-MAKING

—Better Sight Lamps
—Clocks
—Clothes Washers
—Dishwashers
—Flat Irons
—Floor Polishers
—Food Preparing Machines
—Ice Cream Freezers
—Ironing Machines
—Radios
—Ranges
—Range Replacement Units
—Refrigerators
—Sewing Machines
—Table Cooking Appliances
—Tea Kettles
—Vacuum Cleaners
—Water Heaters

FOR BETTER FARMING

—Animal Clippers
—Automatic Water Systems
—Bottle Washers
—Bunch Tyers
—Burglar Alarms
—Brooders
—Churns
—Corn Shellers
—Cream Separators
—Dairy Sterilizers
—Drills
—Drinking Fountain Warmers
—Electric Lawn Mowers
—Ensilage Cutters
—Feed Grinders
—Feed Mixers
—Floodlights
—Hay Hoists
—Incubators
—Insect Traps and Screens
—Light for Plant Growth
—Milk Coolers
—Milking Machines
—Motors
—Paint Sprayers
—Septic Tanks
—Sheep Shears
—Soil Heating Equipment
—Soldering Irons
—Stationary Spray Plants
—Thermostats
—Time Switches
—Tool Grinders
—Ultraviolet Light
—Vegetable Washers
—Ventilators
—Woodworking Machinery

Use This Free Coupon Now

ELECTRICITY ON THE FARM
24 W. 40th St., New York

Without cost to me, please have the manufacturers send complete information on the following Electrically Operated Equipment which I am thinking of buying.

.....

.....

My name is.....

Address .....

.....

I get my electricity from.....

..... 4-36

What's New

Reviewed by T. E. HIENTON

Names and addresses of manufacturers of the articles described in this column will gladly be furnished upon request. Address your requests to What's New Department, ELECTRICITY ON THE FARM, *24 West 40th Street, New York, N. Y.*

Electric Water Heater and Steam Sterilizer

The need for hot water for cleaning and steam, or its equivalent, for sterilization of utensils is well recognized by dairymen. Increasingly stringent rules of city health boards are forcing those, who wish to retain their market, to adopt new equipment for proper cleaning and sterilization. Electric equipment provides a clean, safe and economical method for heating the necessary water and sterilizing the utensils.

The manufacturer of an electric dairy water heater of 5-gallon capacity has recently announced the production of an electric steam generator, steam sterilizing cabinet and dairy utensil wash tank. Water is heated in the water heater, which is mounter on a hinged bracket at one end of the wash tank, and is emptied into the tank by raising the heater on its hinged axis until the water pours out. Steam is generated by setting a steam generator fixture in place in the water heater. Cans or pails are sterilized by inverting them over a jet, while smaller equipment is sterilized in the wash tank by covering it and introducing steam.

Electric Brooder

Experimental work at various state agricultural

How to

GET MORE WORK DONE

Put a Century Motor on the job and get more work done, at less cost, in less time—Pumping Water, Grinding, Shredding, Baling, Feed Mixing, Sawing Wood and other back-breaking jobs that take the profit out of farming when you do them by hand.

And—remember this: When you buy a Century you get a motor with an outstanding performance record as a pioneer in the field of rural electrification.

CENTURY ELECTRIC COMPANY
1806 Pine Street , , St. Louis, Mo.
Offices and Stock Points in Principal Cities

Century
MOTORS
UP TO 600 H. P.

colleges reveals the practicability of using electric brooders in colony brooder houses without auxiliary heat. Records of mortality and energy consumption reveal that they are very low where proper methods of chick raising are followed and energy is conserved by the operator.

A pioneer manufacturer of electric brooders of the West Coast has recently announced an improved type of brooder. This brooder with its two curtains is now available with or without a small fan unit which provides ventilation beneath the hover. The fan is mounted on the top of the brooder at the same location as that of the ventilator of the gravity type. Fan ventilating units direct the air downward against a baffle which deflects it against the ceiling.

For a Clean Sweep

(*Continued from page* 24)

bag after every cleaning. The women who work with them in the home service departments of large electric companies urge you to do it any way once a week.

I have never been tempted to let mine go over long since I lived for a few hurried weeks in an apartment where most of the tools for housekeeping were furnished. The first time I got the

vacuum cleaner into my room, I found the bag swollen almost to bursting, and I took, I really think I took out a bushel of dust and hair and lint, and all the accretions that get into the bags of cleaners. It is a wonder it picked up a single scrap more.

There has never been any danger of forgetting the bag on my cleaner since that day.

On the Air

(*Continued from page* 25)

"fill a book" and Husing recently filled it in his volume of reminiscences, "Ten Years Before the Mike," which has attracted wide attention.

In the radio programs, Husing relates vivid personal experiences. Anecdotes, dramatic obstacles encountered in reporting public events, happenings frivolous and serious, and intimate glimpses of the fantastic world behind the mike.

• • •

AMBITIOUS singers can take a lesson from Bobby Jones, according to Lawrence Tibbett, one of America's leading singers who is frequently heard on the air. Knowing how to relax is as important to vocalizing as the relaxed swing is to the golfer. Tibbett has tried playing golf, too, but thinks he will stick to singing. He says he has more future there.

Save Money When You Buy Your Water System

$64 is a low investment for the GEM "30"

$46.00

BUYS THE JEWEL COMPLETE WITH 250 GAL. PER HOUR PUMP AND TANK

THE GEM "30" IS ILLUSTRATED AND ITS 10 BIG FEATURES ARE LISTED.

1. 300 gal. per hour Shallow Well Pump
2. Repulsion-Induction Motor
3. Silent Operation (mounted in rubber)
4. 30 gal. galvanized Tank
5. Air Volume Control
6. Pressure Gauge
7. Automatic Pressure Switch
8. Automatic Overload Relay
9. Relief Valve
10. Completely assembled in one crate

This little ad must do a lot of work, folks, for the Gem "30" price is figured mighty close for the value built into it. Look at its features. Uniflow builds a complete line priced from $40 up.

MILK COOLERS—Lectrik-Ice Milk Coolers pay for themselves out of premium price received for colder milk—reasonably priced.

LECTRIK-ICE HOME REFRIGERATORS—1936 models are ready but you'll be mighty interested in the 13 new 1935 floor models that we are sacrificing for quick sale. Snap up one before hot weather sets in. Write today.

Write for free literature on our most complete line of Water Systems and Water Softeners in all price ranges. Let us quote on your Milk Cooling needs. Address UNIFLOW MFG. CO., 1546 E. Lake Road, Erie, Pa.

This New 1936 Model Genuine
SOUTH BEND
LATHE
$75.00
LESS MOTOR DRIVE
No down payment—3 years to pay. Write for details on this 9 in. x 8 ft. Workshop Precision, back-geared, screw-cutting Lathe. Made in 8 different drives, 4 bed lengths, 29 practical attachments. Catalog Free!
Weighs 310 Lbs. Crated
Free
WRITE FOR CATALOG 15
SOUTH BEND LATHE WORKS
E. MADISON ST. SOUTH BEND, IND. U.S.A.

Questions and Answers

Conducted by H. J. GALLAGHER

Changing D.C. Motor to A.C.

Question: *Please instruct me how to connect a Delco lighting plant generator into an A.C. motor. What is the speed of a 6 pole A.C. motor?*

EDWARD HIGDONS
Roanoke, Mo.

Answer: I can offer no encouragement in attempting to change D.C. motors or generators into a satisfactory A.C. motor. It means a complete rebuilt job that is usually more expensive than a new motor.

The synchronous speed of a motor in r.p.m. is obtained by multiplying the frequency by 60 (seconds per minute) and dividing by the number of poles in the motor.

The frequency of a 60 cycle service is 120 and

$$\frac{120 \times 60}{6 \text{ poles}} = 1200$$

The actual speed of the armature is approximately 4% less than the synchronous speed.

Operation of Electric Refrigerator

Question: *I have been keeping and preserving a copy of your publication,* ELECTRICITY ON TH' FARM, *date Jan. 30, 1930, Vol. 3, No. 1, for the article on page 18 entitled "How the Electric Motor Produces Cold." In this article there are two statements which seem to reverse themselves. Here they are:*

"If a gas or vapor is compressed and then released, it absorbs heat while it is expanding and returning to its normal condition." "When a gas is compressed it becomes hot, and if while it is still compressed, this heat can be removed it will become a liquid."

I don't seem able to grasp or understand these statements. Could I impose on your kindness to send me some explanation or leaflet that will explain clearly to me just what goes on in the modern electric refrigerator?

Answer: Before answering the above question, I wish to make a personal comment to the effect that it is encouraging to the publishers of ELECTRICITY ON THE FARM that copies of the magazines are kept for reference as long as a period as five years. It emphasizes the value of the publication as a rural electrification library.

The two statements referred to may appear contradictory but in reality they are practically the same thought expressed in two different ways. One of the illustrations given in the January, 1930 ELECTRICITY ON THE FARM, was that of air pressure in an auto tire. When inflating an auto tube the air or gas is put under pressure and the casing becomes warm. If the pressure increases, the casing becomes warmer as the heat of the air being compressed is given off. If enough pressure could be exerted on the air in the tube it would become liquid air. To again change the liquid air back to its normal condition, it would have to take back all the heat it had lost while it was being compressed. Liquid air is a commercial product

STERILIZE DAIRY UTENSILS
and MAKE MORE MONEY!

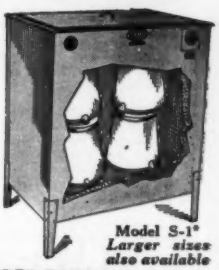
Here's a new sterilizer at SENSATIONAL SAVINGS. $48. F.O.B. factory. Only ESCO management and materials could make such value possible.

Only $48.00 F.O.B. FACTORY

Sterilize all dairy utensils this easy way. Kill bacteria. . . . Lower your bacteria count and GET MORE MONEY FOR YOUR MILK.

ESCO Electric Sterilizers combine thorough sterilization with complete drying, automatically. Cost so little to operate and mean such a big improvement in your milk.

You save time and labor.



Model S-1* *Larger sizes also available*

ESCO

ORDER TODAY . . . or write for descriptive pamphlet.

ESCO CABINET COMPANY
505 E. Biddle St. West Chester, Pa.

Electric

FOR QUICK HOT WATER ANYWHERE—economically

Saves current for electric range users, heating water with 40% LESS ELECTRICITY. Plugs into any convenience outlet—brings 2 pints of water to a boil in less than 6 minutes (capacity 5 pints). WHERE TO USE IT: For emergency use with livestock ● in the nursery ● in the bedroom ● for shaving ● for making drip coffee ● for laundering delicate fabrics ● for afternoon tea ● in the kitchen ● in the bedroom ● at the summer cottage. *See your power company or electrical dealer*—or write WEST BEND ALUMINUM CO., WEST BEND, WIS. Price with heavy rubber cord, $7.50, postpaid.

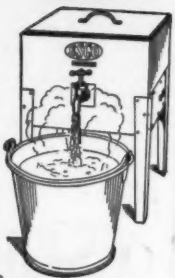
Speedmaster

HOT WATER
Quickly . . . and At Little Cost!

Get this New ESCO ELECTRIC WATER HEATER for dairies. Will heat 3 gallons of 60° water to 170° in one hour.

Only $18.00 F.O.B. FACTORY

It costs so little to GET HOT WATER THIS EASY WAY! No trouble . . . No labor . . . SAVES TIME AND MONEY. Just what you want for washing pails, strainers and other milk equipment. ALL THE HOT WATER YOU WANT WHEN YOU WANT IT.



ESCO Electric Dairy Water Heaters are built in several sizes. They are durable and efficient. Easy to use and COST BUT LITTLE!

ESCO

Order TODAY . . . or write for descriptive Bulletin

Model MH-4

ESCO CABINET CO.

506 E. Biddle St. West Chester, Pa.

Fastest, Finest! *Electric*

ANIMAL CLIPPER

Preferred the world over for its greater speed, ease of handling, rugged, lasting durability. Has 2 to 5 times as much power as other clippers of this type.

STEWART

CLIPMASTER

Exclusive Stewart design ball-bearing motor is air cooled and entirely encased in the insulated **EASY-GRIP** handle that is barely two inches in diameter. Completely insulated—no ground wire required. The fastest clipping, coolest running, easiest-to-use clipper for cows, horses, dogs, mules, etc. Stays sharp longer. A $25 value for $16.95 complete. Slightly higher west of Denver. 100-120 volts. Special voltages slightly higher. At your dealer's or send $1.00. Pay balance on arrival. Send for FREE catalog of Stewart electric and hand power Clipping and Shearing machines. Made and guaranteed by Chicago Flexible Shaft Company, 5524 Roosevelt Road, Chicago, Illinois. **46 years making Quality products.**

CHROMALOX

Super-Speed BURNERS *for your* ELECTRIC RANGE

will fit your old electric range . . . will speed it up tremendously . . . and will save you hours in the kitchen. They have done this for thousands of housewives—they can do it for you.

Ask your Power Company for a demonstration

Write us for details

EDWIN L. WIEGAND CO. 7580 Thomas Blvd. Pittsburgh Pa.

produced under tremendous pressure.

There are gases that become liquids under reasonably high pressures and at ordinary temperatures and in changing from a gas to a liquid give up their heat and take back the heat they lost in again returning to a gas from a liquid.

In applying this physical law to mechanical refrigeration, gas under pressure is released in coils inside the refrigerator. As soon as it is released from pressure in the expansion coils it has to absorb heat to become a gas. The gas is then pumped from the expansion coils and is compressed in a compressor until it again becomes a liquid. The heat it loses in becoming a liquid is conducted away by circulating air on liquid around the compression chamber. When the pressure becomes great enough in the compression chamber, a valve releases the liquid into the evaporating coils where it again absorbs heat to become a gas.

The electric motor operated by a thermostat pumps the gas into the compression chamber whenever the temperature inside the refrigerator becomes warm enough to start the motor.

Heat in a Hurry

(*Continued from page* 18)

it hot. Could you build a fire in your range and get the oven hot enough for a jelly roll in around twelve minutes?"

"You know I couldn't," admitted Joan.

"Then I don't think you're fair," protested Marjorie, "going round calling my electric range slow."

"Particularly," added Jess, "when it's faster for Marjorie, too. I mean the cooking is. She doesn't have to build nor keep up a fire. She has to spend less time watching her cooking because she cooks with measured, controlled heat that will never run away with the job, not die down and go out. She has complete control of her oven heat just by setting a pointer on a dial. The thermostat takes care of that, so she needn't watch the oven, and now with these minute minders, she doesn't even have to keep an eye on the clock."

"Pretty smooth," said Ann who will pick up her son's slang, "Pretty smooth."

As electricity goes far toward preventing farm fires, so it is invaluable in fighting them when they occur. It makes possible adequate water supplies, and the pumping of water under pressure.

Buckets of water can only be effective in fighting very small fires. Any pressure water system is much more effective. Their effectiveness is increased if, when water systems are being installed on farms, outside faucets are placed at vantage points on the house and barn.

CLASSIFIED ADVERTISING

ELECTRIC BROODING WILL SAVE YOU TIME AND MONEY *IF* THE RIGHT EQUIPMENT IS USED. Write for free booklet on "Electric Brooding Facts" published by the pioneers of electric brooding. Lyon Brooders are used thru-out the nation under all climatic conditions. Latest catalog describes the *new patented fan ventilated Lyon Improved Brooder.* Time switches, fountain warmers, alarms, heating and thermostatic supplies for homemade equipment, etc. Get your copy. Dept. EF, LYON ELECTRIC CO., San Diego, Calif.

CHECK THESE ADVANTAGES of WARNER ELECTRIC BROODERS: Natural Ventilation, giving Dry Floors under canopy—Ample Head Room—Foolproof Switch—Triple Insulation. Built to performance standards, not to meet price. INFORMATION FREE; write WARNER BROODER & APPLIANCE CO., NORTH MANCHESTER, INDIANA.

COVER TITLE CONTEST

FEBRUARY COVER

APRIL CONTEST

Here Are the Rules

Ten cash prizes will be awarded for the 10 best titles for the picture on the front cover of this magazine.

The first prize will be $20 cash, and nine second prizes of $2 in cash will be awarded.

In case of a tie, each winning contestant will receive the full cash prize to which he or she is entitled.

Titles should be brief — the shorter the better — and short slogans will be given preference over rhymes.

All members of the farm family to whom this magazine was sent may submit titles, but each contestant may submit only one title.

Question "A" must be answered.

Entries must be sent to the Title Editor, ELECTRICITY ON THE FARM, 6 North Michigan Avenue, Chicago, Illinois, before May 1st.

Winning names and titles will be announced in the June issue.

Send your title on the coupon or make out a similar form on a plain sheet of paper or government postcard.

Awards for February

First Prize — $20

"Her electric washer has banished fear
Of the Shade of Drudgery, hovering near."

MRS. J. C. WILHELM, Windfall Rd., 201, St. Mary's, Pa.

Nine $2.00 Cash Prizes

"Wash day is now wash hour,
Possible only through electrical power."
MRS. JAMES KENNEDY, R.F.D. 1, Waunakee, Wis.

"When an electric washer you choose,
You bid bye-bye to wash-day blues."
MRS. B. G. DARLING, Hooper, Neb.

"'Washing away' thoughts of the past,
A smile for the future, a washer at last."
MRS. EDGAR LITTLE, R.F.D. 1, Cedarville, Ohio

"Unpleasant memories with many a scrub,
Pleasant future with never a rub."
MRS. R. F. GOUD, R.F.D. 4, Freeport, Me.

"The old wash day is just a bad dream,
To the woman who uses an electric machine."
MARGE PAULUS, R.F.D. 1, Mayville, N. Y.

"No rub, no backache, anymore,
The electric washer does the chore."
MISS DORIS A. BROWN, R.F.D. 1, Poultney, Vt.

"Electric washer swift and neat
Makes hand rubbing obsolete."
MRS. WAYNE SHARP, R.F.D. 2, Edgerton, Ohio

"An electric washer, shining and new,
Dispels the gloom of Monday 'blues'."
MRS. H. H. DICKINSON, Belchertown, Mass.

"I used to rub them up and down,
But now the clothes go round and round."
MRS. GEORGIA A. BERSTAND, R.F.D. 1, Broadalbin, N. Y.

My title for the April Front Cover picture of ELECTRICITY ON THE FARM is.....

.....

.....

.....

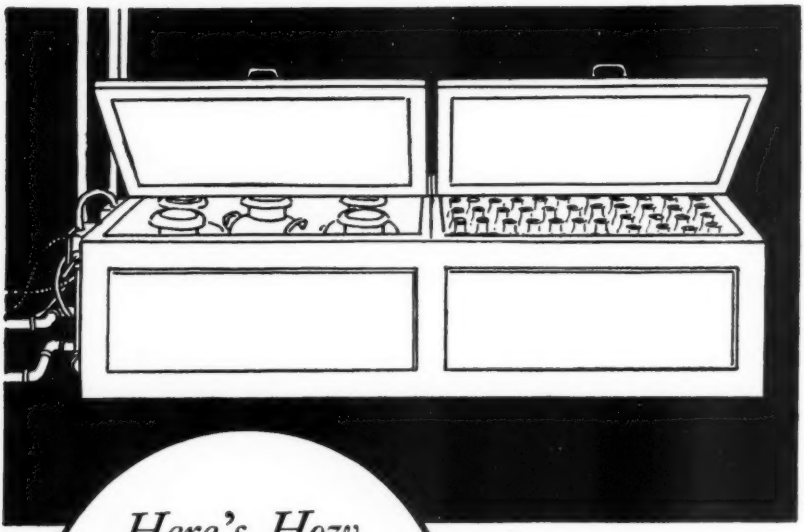
(a) What electrical appliances or equipment advertised in ELECTRICITY ON THE FARM have you purchased in the past year? (Please include brand names.)

.....

.....

My name is..... R.F.D.....

Post Office..... County..... State..... 4-36



Here's How

THE ELECTRIC MILK COOLER BOOSTS YOUR MILK PROFITS

- Cuts Cooling Costs
- Lowers Bacteria Count
- Has Automatic Control
- Saves Your Milk

AN electric milk cooler is a money-making investment for every dairy farmer producing whole milk or cream for resale to consumers. In many instances it will pay for itself within a year.

Don't let inefficient methods rob you of your market for your milk!

ASK YOUR POWER COMPANY

or your Electric Refrigeration Dealer for any further information that you need. If they are not handy, address your inquiry to ELECTRICITY ON THE FARM, 24 West 40th St., New York, or 6 No. Michigan Ave., Chicago, Ill.